United States Department of Agriculture
Forest Service

Salmon-Challis National Forest Invasive Plant Treatment

Draft Record of Decision

Salmon-Challis National Forest; Butte, Custer and Lemhi Counties, Idaho

November 2015

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Background

The Final Environmental Impact Statement (FEIS) for the Invasive Plant Treatment Project has been prepared pursuant to the requirements of the National Environmental Policy Act (NEPA, 40 CFR 1500-1508), the National Forest Management Act and its implementing regulations, and the Challis and Salmon National Forest Land and Resource Management Plans (LRMPs).The overall purpose of the proposed action is to reduce the negative effects of invasive plants on the structure and function of native plant communities and on other natural resource values that can otherwise be adversely impacted by invasive plants and to update analysis of the effects of Forestwide integrated invasive plant management. The proposal is in response to an underlying need to implement policy and direction provided at the National, Regional, State, and Forest levels, which includes control and containment of invasive plants on the Salmon-Challis National Forest (Executive Order 13112 - Invasive Species, 2004 National Invasive Species Strategy and Implementation Plan, 2008-2012 National Invasive Species Management Plan, 2009 Intermountain Region Invasive Species Management Strategy, Idaho Invasive Species Strategic Plan 2012-2016, 2005 Idaho Strategic Plan for Managing Noxious and Invasive Weeds, 1987 Challis National Forest Land and Resource Management Plan, 1988 Salmon National Forest Land and Resource Management Plan).

Purpose and Need

The need of the proposed action is multifaceted:

Invasive plants are diminishing the natural resource values of the Forest.

Forest resources are negatively impacted by existing and expanding invasive plant species populations. These species are known to out-compete native plants, which can result in reduced productivity and biodiversity, habitat loss, and associated economic impacts.

There must be a timely response to new infestations, new invasive plant species, and landscape scale disturbances.

On the Salmon-Challis National Forest, landscape level tree mortality and disturbance from insects and wildfires have increased and are likely to continue to increase the potential for invasive plant infestations. The Forest needs the flexibility to treat expanded and/or newly identified infestations in a timely manner. Existing decisions for invasive plant management on the Forest do not address new species or provide priorities for managing new infestations. Updating these decisions would allow the Forest to satisfy the need to incorporate early detection and rapid response into the invasive plant management program.

Existing invasive plant populations on the Salmon-Challis National Forest require active and adaptive management.

Invasive plant infestations already exist throughout the Salmon-Challis National Forest (SCNF) and without management will increase in density and distribution. Active and adaptive integrated pest management is necessary to contain invasive plants within existing boundaries, reduce infestation densities, and retard the establishment of new infestations. Control efforts should be focused on infestations that can realize the greatest resource benefits – those with the highest risk of spread, those that have not become established, and those that have the best likelihood of success of

control. New analysis and planning is needed to make available the most current tools and guide their best use.

Rehabilitation of degraded landscapes can inhibit the spread and establishment of invasive plants.

Appropriate rehabilitation efforts are a critical component of a fully functional invasive plant management program. The goals of rehabilitating degraded areas may include preventing new infestations, preventing the reoccurrence of eradicated infestations, and/or reducing the density and spread of existing infestations. Post-fire rehabilitation efforts may incorporate one or more of the established control techniques outlined in the Proposed Action.

Federal, State, and Forest Service laws, regulation, policy and direction relating to invasive plant management must be implemented and followed.

Implementing invasive species laws and policies requires aggressive invasive plant management.

This analysis would identify the strategies that the SCNF would use to comply with laws and policies pertaining to invasive plant management.

The FEIS documents the analysis of four action developed alternatives to meet this need.

Changes Between Draft and Final

In addition to minor edits and corrections, a few changes were made to the Draft EIS in preparing the Final EIS. An air quality analysis was added and the aerial buffer for pygmy rabbits was removed since no adverse impacts were identified to warrant the buffer.

Decision

Based upon my review of all alternatives and effects analysis presented in the Final EIS for the Invasive Plan Treatment Project, and consideration of comments received on the Draft EIS, I have decided to implement Alternative 3, with a modification to the aquatic treatment. This allows for up to 20,000 acres of invasive plant treatment annually outside of aquatic treatments, and is described in full in Attachment A of this document.

My decision was made following a review of the project's record that reflects consideration of relevant scientific information, consideration of responsible opposing views, and the acknowledgement of incomplete or unavailable information where pertinent to the decisions being made. Specifically, I am making the following decisions:

1. *Whether to select the proposed invasive plant treatments with any modifications from public scoping or comments or as described in an alternative*

My decision is to select Alternative 3- Proposed Action with a modification to the aquatic herbicide treatment that will be implemented as described in the Attachment A of this ROD. I am making a modification to the aquatic application because there is a large measure of uncertainty regarding the location, scale, and target species of aquatic treatments since there are currently no known infestations of aquatic invasive plants in the Salmon-Challis National Forest. The effects of these treatments were described to the best of the specialists' knowledge in the FEIS. However, to

accommodate the unknown, site-specific Section 7 ESA consultation will be conducted with the National Marine Fisheries Service (NMFS) and US Fish and Wildlife Service (USFWS) prior to any aquatic invasive plant treatments being conducted. An aquatic invasive plant framework strategy (Attachment B of this document) was developed to address concerns associated with aquatic invasive plant treatments and fisheries resources.

Alternative 3 incorporates an adaptive integrated weed management program (IWM) with components of prevention, early detection/rapid response, treatment methods, rehabilitation and restoration, and monitoring.

The proposed adaptive IWM program would utilize a variety of tools, used alone or in combination, to treat invasive plants on the SCNF. Proposed treatment methods include the following:

- Biological control through the use of predators, parasites, and pathogens.
- Herbicide control using ground-based spot or broadcast application methods.
- Herbicide control using helicopter aerial application methods.
- Manual and mechanical methods, such as hand pulling, mowing, cutting, or torching.
- Rehabilitation and restoration methods such as seeding sites to improve competition or prevent establishment of non-native invasive plant species.

Thirteen herbicides were analyzed in the FEIS. Twelve were identified for use in upland areas, eleven for use in riparian areas, and seven were identified for aerial application (Table 4, Attachment A of the ROD). Four of the herbicides were analyzed for aquatic applications. The analysis for the effects in the FEIS remains valid, but aquatic invasive plant treatments would not occur until site-specific fisheries Section 7 ESA consultation is completed.

Table 1: Summary of Alternative 3

Treatment Method	Alt. 3 Proposed Action[1]
Bio-control	Yes
Treated Acres	2,000
# Releases	400
Chemical	Yes
Treated Acres	16,000
# of Herbicides	13
Ground Application	Yes
Treated Acres	8,000
Applied Acres	3,200
Aerial Application	Yes
Treated Acres	8,000
Applied Acres	8,000
Aquatic Application	TBD[2]
Applied Acres	TBD
Total Herbicide Applied Acres	11,200
Mechanical/Manual	Yes
Treated Acres	2,000
Total Treated Acres	20,000

[1]All numbers represent the maximum annual amount; explanation of how acres derived located in section 2.3, Table 2.11 of the FEIS.
[2]Aquatic invasive plant treatments would only occur after site specific fisheries ESA consultation was

completed with NMFS and/or USFWS.

2. *Which project design features are needed*

Design criteria are identified for all treatment methods- manual/mechanical, biological, chemical - and for rehabilitation and restoration activities. These are listed in Attachment A of this document. The design criteria were developed to minimize or eliminate potential impacts invasive plant treatments may have on various resources. The efficacy of the design criteria are analyzed in the FEIS.

3. *What monitoring is required*

Monitoring is included as part of the selected alternative. Parameters for both implementation and effectiveness monitoring are also outlined and are described in Attachment A of this document.

Rationale for the Decision

I have selected Alternative 3, as modified, because this alternative provides the greatest attainment of the project's purpose and need while still being sensitive to other resource concerns within the project area. In making a decision on this project, I evaluated the purpose and need for the project, the effects disclosed in the FEIS, and comments received in staff to staff and Government to Government consultation, during scoping, and the 45-day notice and comment period. The following discussion summarizes the rational for my decision.

1. *Whether the alternative includes treatment of newly discovered infestations*

Alternative 3 includes early detection and rapid response (EDRR). The intent of EDRR is to allow timely control of infestations outside of currently identified areas such as new sites of noxious weeds currently known to exist in the forest, invasive plant species previously unknown on the Forest, or sites that currently exist, but have not been identified in Forest inventories to date. New infestations can be identified and treated when they are small, preventing establishment and spread, while reducing the costs, potential side effects of treatment, and impacts from the invasive plant. EDRR is based on the premise that the impacts of similar treatment methods are predictable, even though the exact location or timing of the treatment may be unpredictable.

The proposed action also contains an adaptive management strategy to deal with invasive plant infestations that are constantly changing. An adaptive management strategy offers the means to describe and evaluate the consequences of changing or new invasive plant infestations and new treatment options. Provided that the results of treating new infestations and the impacts of new treatment methods remain within the effects described, then the results of the analysis remain valid. The adaptive management strategy consists of three principle components.

1. Prioritization and determination of treatment methods for new infestations based upon infestation size, location, site characteristics, and consultation with specialists.
2. Utilization of new treatment methods such as technologies, biological controls, and herbicide formulations which could be developed during the lifetime of this project. The adaptive management strategy would allow incorporation of new treatment methods if the following criteria are met:
    a. An EPA approved herbicide label

b. An agency-approved risk assessment for herbicides
c. APHIS and state of Idaho approval for biological controls
d. Section 18 review to ensure impacts would be similar to those analyzed in the FEIS
e. Completed Section 7 ESA consultation

3. Implementation and effectiveness monitoring.

Attachment A of this ROD contains a full description of these components.

2. Percentage of known treatment land base where effective treatments are available

The FEIS discloses that 1.6% or 49,000 acres of the3.1 million acre project area (the non-wilderness portion of the Salmon-Challis NF) is currently known to have infestations of invasive plants classified by the state of Idaho as noxious weeds. The analyzed maximum treatment acreage, 20,000 acres, would result in 0.006% of the project area having treated acres and 0.004% of the project area having applied acres. Upland and riparian areas were analyzed for invasive plant treatments. Aquatic sites were also analyzed, but treatments would not occur until Section 7 ESA fisheries consultation was completed. There are no areas within the project area specifically excluded from having at least one of the analyzed invasive plant treatment methods utilized.

3. Treatment cost and efficiency

Treatment costs are variable; estimates for acreage costs are based upon average expenditures and market values. The various treatment method cost per acre were disclosed in the FEIS.

Explanations of how estimates were derived are in the FEIS, Section 3.9.

Table 2: Cost Per Acre by Treatment Method

Treatment Method	Personnel and Equipment Costs	Herbicide	Estimated Cost Per Acre
Biocontrol (personnel and agent- high estimate)	$130	$30 (cost of bio-agent)	$165
Manual (hand-pulling)	$3,572	N/A	$3,572
Backpack Herbicide Spraying	$175	$24	$199
UTV/Stock Spraying	$90	$24	$114
Vehicle Broadcast Spraying	$45	$24	$69
Aerial Spraying	$35	$24	$59

The efficiencies of treatment methods are discussed throughout Chapter 3 of the FEIS especially in Section 3.2 Vegetation, which describes the effectiveness of each treatment method on target species.

4. The degree to which the alternative minimizes potential adverse impacts to human health and the environment

The impacts Alternative 3 would have on vegetation (target and non-target species), soil and water resources, fisheries, wildlife, sensitive plant species, human health, recreation, cultural resources, climate change, tribal concerns, rangeland resources, and air quality are disclosed in Chapter 3 of the FEIS. Tables summarizing the impacts of all alternatives by measurement indicator for each resource are presented in Chapter 2 of the FEIS, section 2.3. The impacts of Alternative 3 on human

health and the environment are equal or less than the other action alternatives. These effects are summarized by key issue.

Soil and Water Resources

Existing invasive plant infestations are expected to gradually decline as existing invasive plant infestations are treated and the spread of new infestations into susceptible areas is prevented through an EDRR approach. This Decision would utilize a variety of methods to halt the spread of invasive plants and reintroduce native vegetation to existing infested areas. It is expected that vegetative cover would improve in the long term over existing conditions, resulting in beneficial effects to soil and water resources.

Treatment of invasive plants under the Decision would have minimal direct adverse effects on soil and water resources. With a maximum of 20,000 acres treated annually, or 0.6% of the 3.1 million acre project area, any impacts would likely be minimal on a watershed scale. Design criteria (Attachment A), BMPs (Appendix O, FEIS), and label direction would minimize the potential for herbicides to adversely affect soil and water resources.

My Decision would effectively and efficiently treat a large number of acres using aerial herbicide control. This would avoid the ground-disturbing effects that could occur if ground-based mechanical and herbicide treatments were used to treat these same acres. However, aerial application of herbicide also increases the potential for non-target application of herbicide and the potential for herbicide to be mobilized into surface water or groundwater.

The Proposed Action could potentially result in minimal short term increases in instream sediment loads and localized short term impairment of soil condition as a result of invasive plant treatments. However, long term effects resulting from control of invasive plant infestations would be beneficial, with gradual long term decreases in instream sediment loads, long term improvement in riparian function, and long term improvement in soil condition.

Table 3: Soil and Water Comparison of Issue by Alternative

Measurement Indicator	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Instream Sediment Load	Long term increase	Minimal short term increase; Slight long term increase	Minimal short term increase; Long term decrease	Minimal short term increase; Possible slight long term increase	Minimal short term increase; Long term decrease
Herbicide Concentrations in Water	None	Minimal	Minimal	Minimal	Minimal
Riparian Function	Large increase in infested acres; Long term impairment	Slight increase in infested acres; Gradual long term decline in function	Decrease in infested acres; Long term improvement	Decrease in infested acres; Long term improvement	Decrease in infested acres; Long term improvement

Measurement Indicator	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Soil Condition	Long term impairment	Slight short term impairment; Gradual long term decline in condition	Slight short term impairment; Long term improvement	Slight short term impairment; Gradual long term decline in condition	Slight short term impairment; Long term improvement

Fisheries

Long-term direct and indirect effects of invasive plant treatment under this Decision would be expected to result in improved habitat conditions and reduced threats to aquatic and riparian resources on the SCNF. Invasive plant infestations would progressively decline at an expected rate greater than that under current management, due to the more aggressive treatment strategy and broad scale treatment opportunities afforded by aerial applications. Resultant benefits to aquatic resources through reduced erosion and sediment delivery to drainages would additionally occur at a faster rate than that under the current management. Long-term broad scale benefits to aquatic habitats would be expected to be greatest in the northern part of the SCNF where infestations are extensive.

Design criteria identified for ground based and aerial herbicide applications under my Decision would minimize the potential for both direct delivery of herbicides to aquatic habitats, or impacts to those habitats as a result of surface runoff, wind drift, leaching, or accidental spills. As with current management, however, short term disturbances may occur and may have a slight negative short term effect on aquatic resources in specific areas. These impacts could include localized short-term increases in erosion and sediment delivery to drainages caused by more extensive mechanical treatments (soil disturbance) and chemical treatments (creation of barren ground from invasive plant removal).

The aquatic invasive plant treatment strategy developed as a component of this decision (Attachment B) adds a previously non-existent framework for rapid response to future invasion of aquatic invasive plant species to SCNF waters. Actual treatment strategies would be developed in response to site-specific infestations with collaboration with the Idaho state aquatic species coordinator and appropriate county program managers. Managers would consider the available range of treatment options to implement eradication measures in the early stages of infestation.

Direct effects to Federally Threatened and Endangered and Forest Service Region 4 Sensitive fish as a result of exposure to herbicides used are not likely to occur. Design criteria, including application of herbicides specifically selected for low toxicity and risk values to fisheries and aquatic invertebrates, minimize potentials for direct impact to fisheries resources or important food species.

Indirect effects to aquatic habitats, including designated critical habitats for Federally-listed species, are expected to be minimal and limited to temporary small scale aquatic vegetation reductions as a direct result of targeted aquatic invasive plant treatment. Removal of invasive plants would be expected to result in overall long-term beneficial effects as native aquatic vegetation replaces invasive infestations.

Table 4: Fisheries Comparison of Issue by Alternative

Measurement Indicator	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Effect of Herbicide on ESA/Sensitive/Management Indicator Species					
Biological	N/A	NLAA/MII	NLAA/MII	NLAA/MII	NLAA/MII
Manual and Mechanical	N/A	NLAA/MII	NLAA/MII	NLAA/MII	NLAA/MII
Herbicide	N/A	NLAA/MII	NLAA/MII	NLAA/MII	NLAA/MII
Adequacy of Design Criteria	N/A	Yes	Yes	Yes	Yes

NLAA- Not likely to adversely affect ESA-listed species
MII- May impact individual R4 sensitive species

Wildlife

Invasive plant species are recognized as a threat to biodiversity. Invasive plants influence community structure by having effects on plant community structure and by having impacts on higher trophic levels and impact ecosystem processes such as nutrient cycling, hydrology, and fire regimes (Levine et al. 2003). Invasive exotic plants influence community structure by influencing energy, nutrients, and water out of proportion to their presence on the landscape (Trammel and Butler 1995). The pathways and mechanisms that cause the effects are not thoroughly understood; although competition of introduced invasive plants with native species has been well documented (Levine et al. 2003). For example, invasive plants, such as spotted knapweed, have created near monocultures in areas where the plant has invaded (Thorpe et al. 2009). Increase in the cover of leafy spurge correlated to a decline in the abundance of dominant native plant species both on a large scale and within infestation (Belcher and Wilson 1989). Invasive annual grasses provide sufficient fuel loading to reduce fire return intervals and eliminate fire sensitive shrubs, thus altering the native plant community and allowing for other invasive plants to invade (Pyke et al. 2000).

Invasive plant infestations do have demonstrable effects on wildlife species. The effects weeds have on ungulates and effects ungulates on weeds have been the focus of many studies. Intensive herbivory by ungulates can facilitate the invasion, establishment, and spread of invasive plants because invasive plants tend to be tolerant to ground disturbance, adapted to be easily transported by animals on fur or in guts, and are not very palatable in comparison to native species (Vavra et al. 2007).

Sage-steppe habitats invaded by annual grasses and noxious weeds results in a simplified plant community structure and altered species composition, which reduces habitat quality and quantity by decreasing the availability of appropriate forage or cover plant species needed by sage-grouse (ID SGAC 2006).

There are effects to wildlife species that are not directly affected by loss of forage habitat quality. The volume of native vegetation in an area was found to correlate with native bird density and species richness (Mills et al. 1989). Leafy spurge has been found to result in a decline of nest success in grassland bird species due to reduced habitat quality (Scheiman et al. 2003). Chipping sparrows nest in trees and forage on the ground. In sites invaded by knapweed, grasshopper numbers were reduced. It was found that the initiation of the first nest attempt was delayed was associated with low food availability. Delays in breeding could result in lower fecundity and could also reduce site fidelity (Ortega et al. 2006). Native plants support more Lepidopteran species than

introduced plants; native woody species support more than herbaceous species. Lepidoptera are a primary prey species for bats. Invasive plantshave food-chain effects, which could result in impacts to consumer species such as songbirds and bats (Ortega et al. 2006).

Non-native plant infestations changes vegetation composition and structure and can change disturbance regimes (Knick et al. 2003, Brooks and Pyke 2002). Increased fire frequency can alter the sage-brush structure required by sage-brush obligate species such as sage-grouse and pygmy rabbits. Invasive plant species have been found to play a role in bird species homogenization, especially in bird species that have small ranges (Clavero et al. 2009).

Aquatic plants have the ability to affect water current speed and depth, the amount of surface available for organisms to attach, amount of oxygen available in the water column, and can change nutrient cycling and the amount and quality of primary production and detritus. Invasive aquatic plants have the potential to affect nearly every aspect of an aquatic ecosystem structure and function (Strayer 2010). Invasive plants can affect amphibians and reptiles by altering habitat structure, herbivory and predator/prey interactions, and reproductive success (Martin and Murray 2011).

Each herbicide proposed for use had potential acute and chronic exposure scenarios for wildlife modeled. The scenarios and potential impacts to wildlife are discussed in Chapter 3 of the FEIS. Direct effects to any wildlife species from herbicide toxicity as a result of the proposed action are not likely. None of the thresholds of concern were anticipated to be crossed for any wildlife species for any analyzed herbicide application method. Effects to habitat resulting from biological, manual/mechanical, and herbicide treatments and restoration and rehabilitation activities for all analyzed species were anticipated to be beneficial due to the positive impacts to native vegetation.

Table 5: Wildlife Comparison of Issue by Alternative.

Measurement Indicator	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
ESA/R4Sensitive Wildlife Species Comparison of Issue by Alternative					
Yellow-billed cuckoo	MII	NII	NII	NII	NII
Greater sage-grouse	MII	MIIB	MIIB	MIIB	MIIB
Canada Lynx	NLAA	NLAA	NLAA	NLAA	NLAA
Gray Wolf	MII	MIIB	MIIB	MIIB	MIIB
Wolverine	MII	MIIB	MIIB	MIIB	MIIB
Fisher	MII	MIIB	MIIB	MIIB	MIIB
Bighorn sheep	MII	MIIB	MIIB	MIIB	MIIB
Spotted bat	MII	MIIB	MIIB	MIIB	MIIB
Townsend's big-eared bat	MII	MIIB	MIIB	MIIB	MIIB
Pygmy rabbit	MII	MIIB	MIIB	MIIB	MIIB
Bald eagle	MII	NI	NI	NI	NI
Northern goshawk	MII	MIIB	MIIB	MIIB	MIIB
Peregrine falcon	MII	MIIB	MIIB	MIIB	MIIB
Boreal owl	MII	MIIB	MIIB	MIIB	MIIB
Flammulated owl	MII	MIIB	MIIB	MIIB	MIIB

Measurement Indicator	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Great gray owl	MII	MIIB	MIIB	MIIB	MIIB
Three-toed woodpecker	MII	MIIB	MIIB	MIIB	MIIB
Harlequin duck	MII	MII	MIIB	MIIB	MII
Columbia spotted frog	MII	MII	MIIB	MIIB	MII
Migratory birds	detrimental	beneficial	beneficial	beneficial	beneficial
Elk	detrimental	beneficial	beneficial	beneficial	beneficial

NLAA: Not likely to adversely affect; NII: No Impact to individuals; MII: May impact individuals; MIIB: May impact individuals beneficially

Sensitive Plants

Sensitive plant species found in the SCNF may be impacted by herbicide and mechanical invasive plant control measures; individual plants or small groups could be damaged or killed, especially young plants that are difficult to detect. However, adverse impacts on populations would be negligible. Implementation of the proposed action would not contribute to a downward trend in populations or habitat quality for any of the SCNF sensitive plant species or lead to listing under the Endangered Species Act. Table 6 displays the determination of effects to habitat and sensitive plant populations by species as a result of implementing the Proposed Action alternative.

Table 6: Sensitive Plants Comparison of Issue by Alternative

Measurement Indicator	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Treatment Method Effect on R4 Sensitive Plants[1]					
Biological control	MIIH	NII; BIH	NII; BIH	NII; BIH	NII; BIH
Herbicide application	MIIH	MII; BIH	MII; BIH	MII; BIH	MII; BIH
Mechanical control	MIIH	MII; BIH	MII; BIH	MII; BIH	MII; BIH

NII: No Impact to individuals; MII: May impact individuals; BIH: Beneficially impact habitat; MIIH: May impact individuals and habitat

[1]Sensitive plant species not present in project have NII determinations

Human Health

There would be no adverse human health effects anticipated from biological, manual/mechanical, or rehabilitation/restoration treatments.

Human health assessment is analyzed in individual herbicide risk assessments. A set of general exposure scenarios based on the low, typical, and maximum label rates of the herbicides are analyzed. For workers, exposures analyses are based on the application method, application rate, and acres treated. For the general public, general exposures scenarios included coming in contact with sprayed vegetation and consuming contaminated fruit, fish, or water.

Accidental exposure scenarios are designed to be intentionally extreme. The worker exposure scenarios involve immersion of the hands for a one minute period and wearing contaminated gloves for an hour at varying application rates. Accidental exposures of the general public are evaluated in

three scenarios: a naked child is sprayed directly with an herbicide as it is being applied and no steps are taken to remove the pesticide from the child for one hour; a woman of child-bearing age is accidentally sprayed on her feet and legs and no attempt is made to remove the pesticide for one hour, and there is an accidental spill into a small pond where a young child consumes one liter of contaminated water soon after.

The plausibility of these scenarios is very low because trained applicators should practice proper hygiene and would never spray a person (the child and woman's legs) and in the event of a pond spill, precautions would be taken to prevent public access following a spill (reducing the chance of drinking the water and fishing).

The estimates of longer-term general exposure by consumption of contaminated water are based on estimated application rates and monitoring studies that can be used to relate levels in ambient water to treatment rates in a watershed. In most herbicide applications, however, substantial proportions of a watershed are not likely to be treated. The exposure scenarios based on longer-term consumption of contaminated vegetation assume that an area of edible plants is inadvertently sprayed and that these plants are consumed by an individual over a 90-day period.

Worker exposure to herbicides is affected by the application rate of the herbicide, the number of hours per day the herbicide is applied, the number of acres treated per hour, hygiene used, and personal protective equipment worn. During broadcast and spot treatments, workers can come into contact with herbicides primarily through exposed skin, but also through the mouth, nose, and lungs. Contact with herbicides may result in irritation to the skin and eyes.

Of the thirteen herbicides proposed for use, eight herbicides did not have any scenarios involving workers that exceeded the level of concern. Five herbicides had scenarios that exceed the hazard quotient level of concern for workers at some rate of application. Four of those- chlorsulfuron, dicamba, sulfometuron methyl, and triclopyr- do not exceed any level of concern at typical application rates. One, 2,4-D, exceeded the chronic exposure level of concern at typical application rates.

Of the thirteen herbicides analyzed for use, six did not have any scenarios involving the public that exceeded the level of concern. Seven herbicides have scenarios that exceed the hazard quotient level of concern at some rate of application. One herbicide, picloram, has no scenarios that exceed the level of concern at the typical application rate. Two herbicides, chlorsulfuron and clopyralid, slightly exceed the level of concern only under the scenario where a large amount of chemical is spilled in a pond and water from the pond is consumed soon after. Dicamba has two acute scenarios; consumption of water after a spill and the spraying of a child, that exceed levels of concern at a typical application rate. Triclopyr has a chronic scenario that exceeds the level of concern of a female who eats vegetation that had been sprayed at a typical application rate. Glyphosate exceeded a level of concern for an acute scenario of consuming contaminated produce applied at the maximum rate. One herbicide, 2,4-D, had acute and chronic exposure scenarios that had HQ level of concern exceeded at typical, and lower, application rates.

The public exposure scenarios evaluated in the risk assessments are purposefully extreme. There is a low probability of a child or a woman of childbearing age to be directly sprayed during herbicide applications. Three herbicides, 2,4-D , glyphosate, and triclopyr, had exposure scenarios that exceeded a level of concern if fruit or vegetation containing herbicide residue were consumed

shortly after application; 2,4-D also exceed the level of concern for vegetation consumed over the long-term. There is some edible forest product collection in the SCNF, but is not extensive. People who harvest and consume edible forest products may be exposed through directly handling contaminated plant material, then chewing or eating it. Such doses are unlikely to exceed a threshold of concern. All herbicides applied in the SCNF also have a dye added to the tank mixture, so chemically treated plants are visually identifiable, which makes avoidance of those plants possible.

The risk assessment evaluated two hypothetical drinking water sources: 1) a stream, contaminated with herbicide residues by runoff or leaching from an adjacent herbicide application; and 2) a pond, into which a large amount of herbicide solution is spilled. The only herbicide scenarios of concern would involve a child drinking from a pond contaminated by a spill of a large tank of herbicide solution. The risk of a major accidental spill is not linked in a cause-and-effect relationship to how much treatment of invasive plants is projected for a particular herbicide; a spill is a random event. A spill could happen whenever a vehicle carrying herbicide passes a body of water. The potential risk of human health effects from large herbicide spills into drinking water are alleviated by design criteria that require all aspects of the Spill Plan to be implemented.

Design criteria minimize all worker exposure scenarios by following safe work practices and label advisories. Design criteria would also minimize public exposure by increasing notification of the public regarding areas that had herbicide applications. The general public would not be exposed to harmful levels of any herbicides used in the implementation of this project.

Recreation

Direct effects from the activities can be expected to be visible during and immediately after treatments. Visible consequences may include instances where dye is readily visible or where vegetation is wilted or dead. Where methods such as pulling are used, there may be some level of noticeable surface or soil disturbance. Direct visual effects would occur in the designated and eligible WSR management corridors, developed recreation sites, along roads and trails in the general forest areas, and within the Idaho Roadless areas. These visual impacts from these situations would be short term (generally 1-7 days), and generally minor in nature.

Aerial spray operations, and even some ground based application may result in limited restriction of access to the General Forest Area, or identified recreation sites, in the immediate vicinity of operations. Immediately prior to, during, and immediately after spray operations the affected area would be closed to prevent public access and reduce the possibility of exposure.

The indirect effects of the Decision with all appropriate design criteria in place would result in the existing populations of invasive plants to increase in cover and to spread over time, but at a slower rate than under Alternative 1 and Alternative 2. Each of the various control measures would have the indirect effect of slowing the rate of spread overall and the effect may be particularly dramatic in the vicinity of developed and heavily used dispersed recreation sites due to the accessibility and consistency of treatment in these locations. Human disturbance is one cause for the spread of invasive plants. There would be a positive, long-term effect in reducing the spread of invasive plants by treating developed and heavily used dispersed recreation sites. There would be an indirect and positive effect upon the recreation experience with respect to visual resources and physical access.

By slowing or, in some cases, halting the spread of individual invasive plants and invasive plant populations, the Proposed Action would effectively preserve the visual characteristics of the high use corridors, when compared to No Action. The aerial application component of this alternative may provide an option to treat at more of a landscape scale, and provide a means of treating remote and difficult to access locations such as the Idaho Roadless Areas.

With the proposed design criteria in place, the effect of this alternative upon the Wild and Scenic River designated and eligible stream management corridors (outside of designated Wilderness) would be largely reflective of the anticipated rate of spread of existing populations and the likelihood that new populations would establish and spread. The Decision is an appropriate activity in and adjacent to WSR corridors, including classified 'Wild' segments, since the intent of the activity is to protect or restore the natural environment. The Outstandingly Remarkable Values (ORVs) that these streams possess would likely continue to be affected, however the rate of change, and the degree to which this change is apparent, should be substantially reduced, when compared to No Action in most areas due to prescribed treatment activities. This includes the use of Early Detection and Rapid Response (EDRR) to address newly discovered and treatable populations.

Effects to Idaho Roadless Areas are evaluated based upon the effects the alternative has upon the primitive, semi-primitive non-motorized and semi-primitive motorized classes of dispersed recreation; reference landscapes; and natural appearing landscapes with high scenic quality characteristics. While none of the identified alternatives would provide a permanent control option for invasive plants, implementation of this decision would lead to more effective control than each of the other action alternatives and a greatly reduced rate of spread as compared to No Action, which would maintain the IRA characteristics. It would also lead to a reduced incidence of newly established populations (EDRR).

Other aspects of the recreation experience, primarily dependent upon the activity or quality that the recreation user is pursuing would also be preserved, at least within the foreseeable future. The discussion of visual and access problems addresses this to some extent, however the degree of invasive plant cover in an area can also have a collateral affect upon other components. The primary consideration within this context is the effect that noxious weed populations have upon wildlife and fish species, notably the potential for a reduction in population or relocation of existing populations. This can affect historic use patterns of wildlife and, consequently, the quality of experience for those visitors who seek some level of interaction (hunting, wildlife viewing, fishing). By continuing to address invasive plant infestations in, and around, sites offering high levels of recreation access, the negative effect on these activities would be effectively delayed or, in some cases, alleviated.

Table 7: Recreation Comparison of Issue by Alternative

Measurement Indicator	Alt. 1	Alt. 2	Alt. 3	Alt. 4	Alt. 5
Effects to Visual Resources	Negative	Short-term negative; generally positive	Short-term negative; positive overall	Short-term negative; generally positive	Short-term negative; generally positive
Effects to Wild and Scenic River (WSR) Designated and Eligible Streams	Negative effects to ORVs	Positive effects to ORVs	Positive effects to ORVs	Positive effects to ORVs	Positive effects to ORVs
Effects to Idaho Roadless Areas	Generally negative	Somewhat positive	Generally positive	Generally positive	Generally positive

Public Involvement

The Notice of Intent (NOI) to prepare an Environmental Impact Statement (EIS) was published in the Federal Register on June 23, 2011. The NOI asked for public comment on the proposal until August 2011. Scoping letters were also sent out at this time.

As part of the public involvement process, the agency sent a detailed proposed action to an extensive mailing list via mail and email, and placed press releases in the Challis Messenger, Salmon Recorder Herald, and the Arco Advertiser on April 19, 2012 with a website and contact information.

SCNF personnel met with the Shoshone-Bannock tribe in Challis, Idaho on May 3, 2012 and at Fort Hall, Idaho on June 11, 2012 to discuss the proposed project. The project was published in the July 2011 Schedule of Proposed Actions.

The Notice of Availability (NOA) for the Draft EIS was published in the Federal Register on February 13, 2015. The public comment period extended to March 30, 2015. The NOA and links to the DEIS were sent to an extensive mailing list via mail and email. A legal notice was published in the newspaper of record, the Salmon Recorder Herald, and press releases were published in the Challis Messenger and the Arco Advertiser on February 19, 2015. Five comment letters were received.

Using the comments from the public and other agencies, the interdisciplinary team identified several issues regarding the effects of the proposed action. Main issues of concern included effects of treatments on soil and water, fisheries, wildlife, sensitive plants, human health, recreation, economic efficiency, and air quality (FEIS, Section 1.8 and Sections 3.2 through 3.14). To address these concerns, the Forest Service created the alternatives described below.

Other Alternatives Considered

In addition to the selected alternative, I considered four other analyzed alternatives, which are discussed below. Additionally, there were three other alternatives- Ecosystem Recovery, No Herbicide, and Prescriptive Grazing- that were considered but eliminated from detailed study. Alternative 3 was the environmentally preferred alternative. A more detailed description of the alternatives can be found in the FEIS, section 2.2.

Alternative 1 – No Action - Under the No Action alternative, there would be no biological control, herbicide application, mechanical methods (hand or tool grubbing, mowing), or revegetation utilized. Existing biological controls would progress naturally, but no supplementation would occur. Ongoing invasive plant prevention and education would continue, but additional measures would not.

Alternative 2 – Current Action - The Current Action alternative includes an array of standard invasive plant management practices: information and education programs, cooperative partnerships and coordination, inventory and early detection, control methods, restoration and revegetation, where appropriate, monitoring to track treatment effectiveness, and a broad range of Best Management Practices (BMPs) and design criteria.

The current invasive plant management program utilizes a variety of tools, used alone or in combination, to treat invasive plants in the SCNF. Treatment methods include the biological control through the use of predators, parasites, and pathogens, herbicide control using ground-based spot and broadcast application methods, mechanical and manual methods, such as hand pulling, mowing, cutting or torching, and rehabilitation and restoration methods such as seeding sites to improve competition or prevent establishment of non-native invasive plant species.

Section 7 of the Endangered Species Act consultation regarding the current invasive plant treatment was completed with the regulatory agencies (NMFS and USFWS) in June 2012. The Biological Opinion received from the NMFS specified that no more than 5,500 acres would have herbicide applied annually and no more than 550 acres of those acres would be chemically treated within 100 feet of live water.

Alternative 4 – No Aerial Herbicide Application - This alternative is identical to the Proposed Action alternative with the exception that there would be no aerial application of herbicides. All design criteria, except those specific to aerial application, would apply to this alternative.

Alternative 5- No Aquatic Herbicide Application - This alternative is identical to the Proposed Action alternative with the exception that there would be no aquatic application of herbicides. All design criteria, except those specific to aquatic herbicide application, would apply to this alternative.

Findings Required by Other Laws and Regulations

Many laws, regulations, and agency directives require that my decision be consistent with their provisions. I have determined my decision is consistent with all laws, regulations, and agency policy. Following is a summary of findings required by major environmental laws.

Consistency with the Salmon and Challis Land and Resource Management Plans

This FEIS complies with the Salmon and Challis National Forest Land and Resource Management Plans Final Environmental Impact Statements (1987 and 1988), and all associated amendments. Forest-wide desired condition, goals, objectives, and standards and guidelines for noxious weeds treatments are found under Range Resources in both the Challis and the Salmon Land and Resource Management Plans (LRMPs). No LRMP amendments are required to treat invasive plants.

Interim Strategies for Managing Anadromous Fish-Producing Watersheds and the Inland Native Fish Strategy

These strategies, otherwise known as PACFISH and INFISH, amended the Salmon and Challis LRMPS in 1995. The PACFISH strategy was an attempt ensure management actions do not have adverse environmental effects that could result in extinction or further endangerment of anadromous fish stocks. The INFISH strategy applies to areas where PACFISH did not apply. The riparian goals in both strategies established an expectation of the characteristics of healthy, functioning watersheds, riparian areas, and associated fish habitats. Through the design criteria and ESA consultation requirements, the goals of PACFISH and INFISH are met. This decision is consistent with both PACFISH and INFISH.

The National Environmental Policy Act (NEPA) (PL 91-190)

The purposes of this Act are: "To declare a national policy which will encourage productive and enjoyable harmony between man and his environment; to promote efforts which will prevent or eliminate damage to the environment and biosphere and stimulate the health and welfare of man; to enrich the understanding of the ecological systems and natural resources important to the Nation; and to establish a Council on Environmental Quality" (42 U.S.C. Sec. 4321). This decision is consistent with the Act and the procedures outlined in the CEQ regulations.

The National Forest Management Act (NFMA) (PL 94-588)

(h)(3)(i) states "Resource plans and permits, contracts, and other instruments for the use and occupancy of National Forest System lands shall be consistent with the land management plans". This decision is consistent with both the Salmon and the Challis National Forest LRMPs.

The Endangered Species Act (ESA) (PL 93-205)

The purposes of this Act are to provide for the conservation of threatened and endangered species and their habitats. The Forest is required by the Endangered Species Act (ESA) to ensure that any action approved will not jeopardize the continued existence of threatened and endangered species or result in the destruction or adverse modification of critical habitat.

The Forest Service prepared biological assessments (BAs), which analyze potential effects of the proposed project on threatened and endangered species that may be present in the project area, to comply with the ESA. The U.S. Fish and Wildlife Service (USFWS) and the National Marine Fisheries Service (NMFS) decide if the implementation of the selected alternative would jeopardize the continued existence of any species listed or proposed as threatened or endangered under the ESA. The SCNF submitted a final fisheries Biological Assessment on October 20, 2015. The BA disclosed that implementation of manual/mechanical control, biological control, and rehabilitation/restoration components of the proposed Salmon-Challis National Forest Invasive Plant Management Program may affect, but are not likely to adversely affect Snake River spring/summer Chinook salmon, Snake River sockeye salmon, Snake River Basin steelhead trout, or Columbia River bull trout. Chemical herbicide treatment elements of the proposed Invasive Plant Management Program are determined likely to adversely affect Snake River spring/summer Chinook salmon, Snake River sockeye salmon, Snake River Basin steelhead trout, and Columbia River bull trout within the project action area.

Implementation of proposed activities, further, may affect but are not likely to adversely affect Designated Critical Habitat for Snake River spring/summer Chinook salmon, Snake River sockeye salmon, Snake River Basin steelhead trout, or Columbia River bull trout within the action area.

The terrestrial wildlife BA submitted to the USFWS on October 28, 2015 determined that implementation of Alternative 3 may affect, but is not likely to adversely affect yellow-billed cuckoos and Canada lynx.

Concurrence with these determinations and issuance of a Biological Opinion is pending with the regulatory agencies.

The Clean Water Act, as amended (CWA) (PL 92-500, PL 95-217, and PL 100-4)

The primary objective of this Act is "…to restore and maintain the chemical, physical, and biological integrity of the Nation's waters". This Act establishes a non-degradation policy for all federally proposed projects to be accomplished through planning, application, and monitoring of Best Management Practices (BMPs). Identification of BMPs is mandated by Section 319 of the Act. Design criteria were developed to tier to the National Core BMPs. This decision complies with the Clean Water Act.

The Clean Air Act, as amended (PL 101-549)

A primary purpose of this Act is to "protect and enhance the quality of the Nation's air resources so as to promote the public health and welfare and the productive capacity of its population". The primary means by which this is accomplished is through the implementation of the National Ambient Air Quality Standards (NAAQS). There are no mandatory Class I airsheds, maintenance areas, or nonattainment areas within the project area, therefore elements pertaining to general conformity do not specifically apply. This decision complies with the Clean Air Act.

The Wild and Scenic Rivers Act, as amended (PL 90-542)

This Act allows for selected rivers that possess outstandingly remarkable scenic, recreational, geologic, fish and wildlife, historic, cultural, and other similar values, shall be preserved in free-flowing condition and that they and their immediate environments shall be protected for the benefit and enjoyment of present and future generations. The proposed action does not impact any of the qualities that make sections of waterbodies eligible for inclusion in the wild and scenic river system. This decision complies with the Wild and Scenic Rivers Act.

Federal Actions to Address Environmental Justice to Minority Populations and Low-Income Populations (Executive Order 12898)

This EO makes achieving environmental justice part of every Federal agency's mission by identifying and addressing, as appropriate, disproportionately high and adverse human health or environmental effects of its programs, policies, and activities on minority populations and low-income populations in the United States. The decision found no impacts to minority and low income populations. Human health concerns are analyzed and design criteria were developed to reduce or eliminate any impacts. This decision complies with EO 12898.

Consultation and Coordination with Indian Tribal Governments (Executive Order 13175)

This EO establishes regular and meaningful consultation and collaboration with tribal officials in the development of Federal policies that have tribal implications. Consultation and notification was conducted with affected tribal governments. This is documented in Section 3.12 of the FEIS. This decision complies with EO 13175.

The National Historic Preservation Act, as amended (PL 89-665)

Section 106 of the NHPA requires that, before approving or carrying out a federal, federally assisted, or federally licensed undertaking, federal agencies must take into consideration the impact that the action may have on historic properties. Provisions requiring archeological consultation prior to any ground disturbing activities ensure that this project will not impact historic properties. This decision complies with the National Historic Preservation Act.

The Migratory Bird Treaty Act of 1918 and Responsibilities of Federal Agencies to Protect Migratory Birds (Executive Order 13186)

The purpose of this Act was to establish an international framework for the protection and conservation of migratory birds. The Migratory Bird Treaty Act (MBTA) implements various treaties and conventions between the U.S, Canada, Japan, Mexico, and the former Soviet Union for protecting migratory birds. Under the Act, taking, killing, or possessing migratory birds, including nests and eggs, is unlawful. EO 13186 outlines the responsibilities Federal agencies have to protect migratory birds under the MBTA. Applicable Federal Agency responsibilities described in EO 13186 are incorporated into design criteria of the proposed action. This decision complies with the MBTA and EO 13186.

The Carlson-Foley Act (PL 90-583)

The purpose of this Act is to authorize and direct federal agencies to permit control of noxious plants by state and local governments on a reimbursement basis in connection with similar weed control programs carried out on adjacent nonfederal land. The proposed action clearly identifies that activities would be implemented with partners at the federal, state, and local levels where opportunities exist. This decision complies with the Carlson-Foley Act.

The Plant Protection Act (PL 106-224)

This Act consolidates and modernizes all major statues pertaining to management and control of noxious weeds. The integrated weed management strategy incorporated into this decision complies with the Plant Protection Act.

Invasive Species (Executive Order 13112)

This executive order directs federal agencies to develop and coordinate a management program for control of undesirable plants which are noxious, harmful, injurious, poisonous, or toxic on Federal lands under the agency's jurisdiction; establish and adequately fund the program, to complete and implement cooperative agreements and/or memorandums, and establish Integrated Weed Management to control or contain species identified and targeted under cooperative agreements

and/or memorandums. The integrated weed management strategy incorporated into this decision complies with EO 13112.

The Federal Insecticide, Fungicide, and Rodenticide Act (FIFRA)

The Forest Service is authorized by the FIFRA to use pesticides for multiple-use resource management and maintenance of the quality of the environment as long as the actions comply with the National Environmental Policy Act and the Council on Environmental Quality regulations. This decision complies with FIFRA.

Best Available Science

The conclusions disclosed in the EIS and summarized in this document are based on a review of the project's record that reflects consideration of relevant scientific information and responsible opposing views where raised by internal or external sources, and the acknowledgement of incomplete or unavailable information, scientific uncertainty, and/or risk where pertinent to the decision being made.

Implementation

Once the reviewing officer has issued the response to the objections and the responsible official has followed any instructions contained in the written response, or if no objections are received, the responsible official may sign the final Record of Decision and implement the project without further legal notice of the decision. Interested and affected parties will be informed of the decision. The signing of the Record of Decision in accordance with 40 CRF 1506.10, may occur on, but not before, the 5th business day following the end of the objection filing period.

Administrative Review or Objection Opportunities

This Draft Record of Decision and Final Environmental Impact Statement are subject to objection pursuant to 36 CFR 218, subparts A and B (Pre-Decisional Administrative Review). Objections will only be accepted from those who have previously submitted specific written comments regarding the proposed project during designated opportunities for public comment in accordance with §218.5(a). The first designated opportunity was the public scoping period. The second was the 45-day public comment period for the DEIS. Issues raised in objections must be based on previously submitted, timely, specific written comments regarding the proposal unless based on new information arising after the designated comment opportunities.

A written objection must be submitted within 45 calendar days following the publication date of the legal notice of this opportunity to object in the Recorder- Herald, Salmon, Idaho. It is the responsibility of the objector to ensure their objection(s) is received in a timely manner. The publication date in the newspaper of record is the exclusive means for calculating the time to file an objection. Those wishing to object should not rely on date or timeframe information provided by any other source. The regulations prohibit extending the time to file an objection. Objections, including attachments, must be filed via mail, fax, email, hand-delivery, express delivery, or messenger service.

The objection must be filed with the objection reviewing officer in writing. The objection must contain the minimum requirements specified in §218.8(d) and incorporation of documents by reference is permitted only as provided in §218.8(b). At a minimum, the objection must include the following information (36 CFR 218.8(d)):

- The objector's name and address, with a telephone number if available;
- A signature, or other verification of authorship upon request (a scanned signature for electronic mail may be filed with the objection);
- When multiple names are listed on an objection, identification of the lead objector and verification of the identity of the lead objector must be provided upon request;
- The name of the proposed project for which the decision will be made,
- The name and title of the Responsible Official, and the name of the Forest on which the proposed project will be implemented; and
- A description of those aspects of the proposed project addressed by the objection, including specific issues related to the proposed project; if applicable, how the objector believes the environmental analysis or draft decision specifically violates law, regulation, or policy; suggested remedies that would resolve the objection; supporting reasons for the reviewing officer to consider; and
- A statement that demonstrates the connection between prior specific written comments on the particular proposed project or activity and the content of the objection, unless the issue is based on new information that arose after the opportunity for comment.

Written objections must be submitted (regular mail) to: Nora Rasure, Objection Reviewing Officer, Federal Building, 324 25th Street, Ogden, Utah 84401 (postal) or (801) 625-5277 (facsimile). Electronic comments must be submitted in a format such as an email message, plain text (.txt), rich text format (.rtf), or Word (.doc or .docx) to: objections-intermtn-regional-office@fs.fed.us

Please type "Salmon-Challis National Forest Invasive Plant Treatment Project" in the subject line for e-mail messages and facsimile and include your mailing address and phone number.

An automated response should confirm your electronic objection has been received. In cases where no identifiable name is attached to an electronic message, a verification of identity will be required. A scanned signature is one way to provide verification.

If an objection is received on this project, a 45-day objection review period will begin. Prior to a written response by the reviewing officer, the reviewing officer or the objector may request to meet to discuss issues raised in the objection and any potential resolution. The reviewing officer has the discretion to determine whether or not adequate time remains in the review period to make a meeting with the objector practical. All meetings are open to the public.

Objections can be dismissed for a number of reasons including if they are not timely, if the project is not subject to objection, if the person did not comment in a timely or specific manner, if insufficient or illegible information was presented, if identity cannot be provided, if the objector withdraws the objection, or if the responsible official cancels the objection process. The responsible official can cancel the objection process if s/he feels the objection process should be re-initiated; for example, if s/he believes additional information to the environmental impact statement is needed to further understand the project.

At the end of the objection reviewing period the reviewing officer may consolidate objections and issue one response or may decide to issue a written response to each objection. The written response(s) will present the reasons for the response, but is not required to be a point-by-point response. It may contain instructions to the responsible official. The written response will be the final decision by the U.S. Department of Agriculture on the objections.

Contact Person

For additional information concerning this decision, contact Jennifer Purvine, Team Leader, Challis-Yankee Fork Ranger Station, HC 63 Box 1669, Challis ID, 83226; phone (208)879-4162; or email jpurvine@fs.fed.us. For questions about the Forest Service objection process, contact Ken Rodgers, phone (208)879-4154 or email krodgers@fs.fed.us.

CHARLES A. MARK
Forest Supervisor
Salmon-Challis National Forest

[DATE]

Attachment A- Alternative 3, as modified

Details of Decision

The proposed action is to prevent the establishment of new invasive plant species, prevent further spread of existing invasive plant species, and maintain native plant communities. The proposed action would implement an adaptive integrated weed management (IWM) strategy to eradicate or control existing or newly discovered invasive plants over the next ten to fifteen years as budgets allow. The IWM strategy is derived from the Forest Service National Strategic Framework for Invasive Species Management (2013), Forest Service National Strategy and Implementation Plan for Invasive Species Management (2004), Strategy for Noxious and Nonnative Invasive Plant Management (USDA Forest Service 1998a), and the Forest Service Invasive Species Management Manual (FSM 2900), all of which direct National Forests to implement adaptive integrated weed management programs with the following nationally established program components.

Prevention

Prevention is the "first line of defense" and is a crucial element of IWM. The goal is to prevent the introduction and establishment of new invasive plant species. External and internal education and outreach is essential. A variety of educational materials such as signage, exhibits, presentations, and workshops would be used by the Forest and cooperative partners to raise public awareness of invasive plants and the ecological and economic damage created by their establishment and spread. Internal training would be used to educate personnel to recognize invasive plant species, understand vectors and preventive measures, incorporate preventive measures into the project design of all projects and activities, follow procedures for reporting and mapping invasive plant infestations, and communicate with other programs and agencies. This is a non-treatment aspect of the IWM approach. The SCNF invasive plant prevention plan is located in Appendix C; however, the practices in the plan are not part of the FEIS analysis.

Early Detection/Rapid Response

Early Detection and Rapid Response (EDRR) is a critical component of an IWM program. As new invasive plant infestations are detected, a quick and coordinated inventory and eradication response would reduce negative environmental and economic impacts.

EDRR is intended to find new invasive plant infestations at the earliest stages of invasion resulting in decreased control costs and the need for repeated treatments. New invasive species may not be listed as a noxious on the statewide list; however, these plants are identified on statewide watch or EDRR lists.

The Proposed Action includes new national direction on the control of new detections. Invasive plant sites that are discovered subsequent to the current invasive plant inventory would be evaluated to determine that the eradication treatments and environmental impacts are consistent with those analyzed in this FEIS.

Control and Management

The integrated and adaptive invasive plant management strategy proposed would facilitate the use of a variety of treatment options and combinations intended to minimize the effect of invasive plants and limit their spread.

Control techniques include manual/mechanical, chemical, and biological methods. Areas infested by invasive plants on the SCNF may exhibit a wide range of site conditions. Effective control relies on a clear understanding of the target species: its biology, the ecosystem it has infested, associated introduction pathways, and effective control methods. Control often requires repeat treatments and monitoring of control efficacy.

A variety of treatment options and combinations that could be applied to a wide range of site conditions are necessary so that flexibility is provided to increase effectiveness, reduce cost, and minimize potential for adverse effects from treatments. As monitoring identifies the effectiveness of treatments, specific control measures are adjusted.

The proposed action identifies the treatment of up to 20,000 acres of invasive plants annually. This number exceeds the current budget allocated for treatments, but is intended to be robust enough to address both known and future invasive plant infestations. The control and management aspect of the IWM strategy is the focus of the analysis in this FEIS.

Rehabilitation and Restoration

Ultimately, the goal for invasive plant management efforts is to restore and maintain healthy native or desired plant communities that are resistant to invasive plant establishment, which recover quickly from disturbances, and provide ecosystem functionality. Many invasive plant-infested plant communities are able to successfully re-establish without intervention after control efforts. However, sites that are severely damaged or at which few desirable species remain may not be able to recover without help.

Rehabilitation and restoration are vital components of an adaptive IWM program. Rehabilitation is defined as short-term mitigation to ensure minimum site stability and functionality. This may include site preparation and seeding of desirable vegetation. Restoration is a long-term objective and involves returning sites to natural functions and native species.

Monitoring

Monitoring is a necessary part of implementing an adaptive IWM program. Monitoring provides the data for adaptive management. Information collected from monitoring may be used by managers to evaluate the efficacy of prevention, EDRR, treatment, and rehabilitation and restoration actions. There are two basic types of monitoring essential to an adaptive integrated weed management plan: implementation monitoring and effectiveness monitoring.

Implementation monitoring answers the question, “Did we do what we said we would do?” and effectiveness monitoring answers the questions, “Were prevention, treatment and restoration actions effective?” and “Were intended goals accomplished?”.

Managers may use monitoring data from one site or set of sites to predict the effects of similar actions on other parts of the project area. This information can be used to promote the use of the most effective techniques for prevention, detection, treatment, and restoration, and avoid the use of ineffective methods.

Treatment Methods

The proposed adaptive IWM program would utilize a variety of tools, used alone or in combination, to treat invasive plants on the SCNF. Proposed treatment methods include the following:

- Biological control through the use of predators, parasites, and pathogens.
- Herbicide control using ground-based application methods.
- Herbicide control using helicopter aerial application methods.
- Manual and mechanical methods, such as hand pulling, mowing, cutting, or torching.
- Rehabilitation and restoration methods such as seeding sites to improve competition or prevent establishment of non-native invasive plant species.

Table 1: Maximum Acres to be Treated Annually by Treatment Method

Treatment Method	Maximum Acres Treated[1]
Biological Control	2,000
Mechanical Control	2,000
Herbicide Control	16,000
• Ground Application	8,000
• Aerial Application	8,000

[1]See Table 2-11 in the FEIS for complete description

The treatments would abide by design criteria, the purpose of which is to reduce or eliminate the potential adverse impacts of the various invasive plant treatments. Design criteria are a set of required implementation features applied to projects to ensure that the project is conducted according to environmental standards and that adverse effects are within the scope of those predicted in this FEIS. Implementation of the design criteria is mandatory. The effectiveness of the design criteria is addressed throughout Chapter 3 of the FEIS.

Treatment Priority and Strategy

Treatment priorities are based on factors such as the current abundance and distribution of the species, type and values of the site affected, and risk for spread or infestation into other areas. Other program management considerations may affect priorities. For example, priority may be given to sites located in areas proposed for ground-disturbing management activities. In addition, opportunities for special funding or cooperative projects with other landowners, agencies, and organizations may be considered. Treatment priorities do not necessarily refer to the order in which an infestation is treated during a given fiscal year. They are part of an adaptive integrated weed management strategy used by managers in determining how to allocate resources.

The SCNF criteria for determining treatment priority of invasive plant infestations are in Table . Higher priority is generally given to those new invasive plant infestations where reduction or eradication of infestations is likely to be successful. For established infestations, suppression

strategies play a much more important role. In general, the vast majority of currently inventoried infested acres are associated with human-caused disturbance such as travel routes. Because they are common to infestations at all potential priority levels, spread vectors such as trailheads, roadways, campgrounds, and parking areas are not explicitly considered when setting priorities.

Table 2: Treatment Priorities

Priority	Description	Treatment Objective
Highest	• Infestations of species new to the project area (EDRR).	Eradication of new species
Second priority	• Infestations of species that occur rarely within the project area. • Infestations of species that occur rarely within a given zone. • Infestations that pose substantial risk of infestation to priority areas currently free of the invasive species	Control by suppression to reduce existing infestations and reduce or eliminate new infestations of uncommon noxious weeds.
Third priority	• Infestations in or near areas that experience disturbance due to human activity, such as designated travel routes, recreation sites, emergency staging areas, and gravel pits. • Infestations in or near areas that experience disturbance due to natural forces, such as those recently affected by wildfire. • Infestations with the potential to spread across ownership boundaries onto lands that are not currently infested. • Infestations for which treatment has a high probability of success.	Control by direct suppression. Utilize indirect suppression where practical for achieving control.
Fourth priority	• Infestations in or near areas that contain desirable plant communities, such as intact native plant communities and sensitive, threatened, or endangered plant or animal habitat. • Infestations of established species occurring in an otherwise uninfested area.	Control by direct suppression
Fifth priority	• Infestations in habitat susceptible to invasion by and spread of invasive plants. • Infestations of established invasive plants in generally infested areas. • Large infestations of established invasive plants.	Control by direct suppression when possible. Emphasis placed on indirect suppression.

Table 3 summarizes commonly used species-specific integrated control measures that would be applied to known noxious weed species in the SCNF. The table displays a range of effective treatment options. Different treatment choices may be used based on circumstances such as new Endangered Species Act (ESA) consultation requirements, information on treatment effectiveness, and availability of new products. The priority and intensity of treatment needed varies widely based

on site conditions, resources at risk from invasion, and the range and aggressiveness of individual target species.

Table 3: Range of Effective Treatment Options by Target Species

Noxious Weed	Treatment Method[1]		
	Biological	**Chemical**	**Mechanical**
Russian Knapweed	*Subanguina picridis, Jaapiella ivannikovi*	triclopyr + clopyralid; picloram; clopyralid + 2,4-D; clopyralid; aminopyralid; aminopyralid + metsulfuron; aminopyralid + 2,4-D; glyphosate; 2,4-D; chlorsulfuron	Pulling and Hoeing
Hoary Alyssum	None Currently Available	metsulfuron; chlorsulfuron	Pulling
Whitetop	None Currently Available	metsulfuron; chlorsulfuron; metsulfuron + chlorsulfuron; 2,4-D	Not Effective
Musk Thistle	*Rhinocyllus conicus, Trichosirocalus horridus*	chlorsulfuron; metsulfuron; Part A[2]: metsulfuron, Part B: dicamba + 2,4-D; metsulfuron + chlorsulfuron; triclopyr + clopyralid; clopyralid; aminopyralid; aminopyralid + metsulfuron; aminopyralid + 2,4-D; picloram; clopyralid + 2,4-D; dicamba; 2,4-D; glyphosate + 2,4-D	Mowing/ Hoeing
Diffuse Knapweed	*Cyphocleonus achates, Larinus minutus, Sphenoptera jugoslavica, Urophora affinis, Urophora quadrifasciata, Bangasternus fausti, Pterolonche inspersa*	clopyralid + triclopyr; picloram; clopyralid; aminopyralid; aminopyralid + metsulfuron; aminopyralid + 2,4-D; clopyralid + 2,4-D; glyphosate; 2,4-D	Pulling and Hoeing
Spotted Knapweed	*Agapeta zoegana, Bangasternus fausti, Chaetorellia acrolophi, Cyphocleonus achates, Larinus minutus, Larinus obtusus, Metzneria paucipunctella, Sphenoptera jugoslavica, Terellia virens, Urophora affinis, Urophora quadrifasciata*	triclopyr + clopyralid; picloram; clopyralid + 2,4-D; clopyralid; aminopyralid; aminopyralid + 2,4-D; 2,4-D; glyphosate	Pulling and Hoeing

Noxious Weed	Treatment Method[1]		
	Biological	Chemical	Mechanical
Rush Skeletonweed	*Cystiphora schmidti, Eriophyes chondrillae, Puccinia chondrillina, Bradyrrhoa gilveolella*	clopyralid; aminopyralid; aminopyralid + metsulfuron; picloram; metsulfuron + chlorsulfuron; 2,4-D	Mowing
Oxeye Daisy	None Currently Available	metsulfuron; aminopyralid; aminopyralid + metsulfuron; aminopyralid + 2,4-D; picloram; clopyralid	Pulling and Hoeing
Canada Thistle	*Rhinocyllus conicus, Urophora cardui, Hadroplontus litura*	clopyralid + triclopyr; clopyralid; aminopyralid; aminopyralid + metsulfuron; aminopyralid + 2,4-D; picloram; metsulfuron + chlorsulfuron; Part A: metsulfuron, Part B: dicamba + 2,4-D; chlorsulfuron; glyphosate; dicamba	Not Effective
Field Bindweed	*Aceria malherbae, Tyta luctuosa*	dicamba; picloram; dicamba + 2,4-D; Part A: metsulfuron, Part B: dicamba + 2,4-D; metsulfuron; metsulfuron + chlorsulfuron; glyphosate; 2,4-D	Not Effective
Houndstongue	None Currently Available	metsulfuron; aminopyralid + metsulfuron; imazapic; Part A: metsulfuron, Part B: dicamba + 2,4-D; picloram	Pulling and Hoeing
Leafy Spurge	*Aphthona cyparissiae, Aphthona czwalinae, Aphthona flava, Aphthona lacertosa, Aphthona nigriscutis, Hyles euphorbiae, Oberea erythrocephala*	imazapic; picloram + 2,4-D; picloram; glyphosate; dicamba	Mowing
Black Henbane	None Currently Available	metsulfuron; picloram; dicamba; metsulfuron + chlorsulfuron; Part A: metsulfuron, Part B: dicamba + 2,4-D	Pulling, Hoeing and Mowing
Common St. John's Wort	*Agrilus hyperici, Aplocera plagiata, Chrysolina hyperici, Chrysolina quadrigemina*	2,4-D; metsulfuron; glyphosate; imazapic; picloram	
Dyer's Woad	None Currently Available	metsulfuron; chlorsulfuron; Part A: metsulfuron,; Part B: dicamba + 2,4-D; metsulfuron + chlorsulfuron	Pulling

Noxious Weed	Treatment Method[1]		
	Biological	Chemical	Mechanical
Perennial Pepperweed	None Currently Available	chlorsulfuron; metsulfuron; aminopyralid + metsulfuron; metsulfuron + chlorsulfuron; glyphosate; 2,4-D; imazapyr; Part A: metsulfuron, Part B: dicamba + 2,4-D; metsulfuron + chlorsulfuron	Mowing
Dalmatian Toadflax	*Brachypterolus pulicarius, , Mecinus janthinus, & Calophasia lunula*	chlorsulfuron; metsulfuron; picloram + chlorsulfuron; picloram; dicamba	Pulling
Yellow Toadflax	*Brachypterolus pulicarius, Calophasia lunula,Gymnetron antirrhini, Mecinus janthinus*	chlorsulfuron; picloram + chlorsulfuron; picloram + metsulfuron; picloram; dicamba	Pulling
Scotch Thistle	None Currently Available	chlorsulfuron, metsulfuron, clopyralid + 2,4-D, clopyralid, aminopyralid, picloram, dicamba, 2,4-D	Hoeing
Knotweed	None Currently Available	imazapyr, glyphosate	Cut Stem
Sulphur Cinquefoil	None Currently Available	triclopyr, 2,4-D, picloram, chlorsulfuron, aminopyralid, metsulfuron	Hoeing
Saltcedar	*Diorhabda carinulata*	imazapyr, glyphosate, triclopyr	Cut Stump
Puncturevine	*Microlarinus lareynii*	chlorsulfuron, 2,4-D	Pulling, Hoeing, Torching

[1] Prather et al. 2011, Prather 2012, Prather 2013, Newton et al. 2013
[2]Part A and Part B refer to tank mixes.

Early Detection Rapid Response

Early detection and rapid response (EDRR) allows for discovery and treatment of invasive plant infestations located outside of currently identified infested areas. Infestations outside of currently identified areas may include new sites of noxious weeds currently known to exist in the forest, invasive plant species previously unknown on the Forest, or sites that currently exist, but have not been identified in Forest inventories to date. The intent of EDRR is to allow timely control, so that new infestations can be identified and treated when they are small, preventing establishment and spread, while reducing the costs, potential side effects of treatment, and impacts from the invasive plant. EDRR is based on the premise that the impacts of similar treatment methods are predictable, even though the exact location or timing of the treatment may be unpredictable. The incorporation of EDRR is common to all action alternatives.

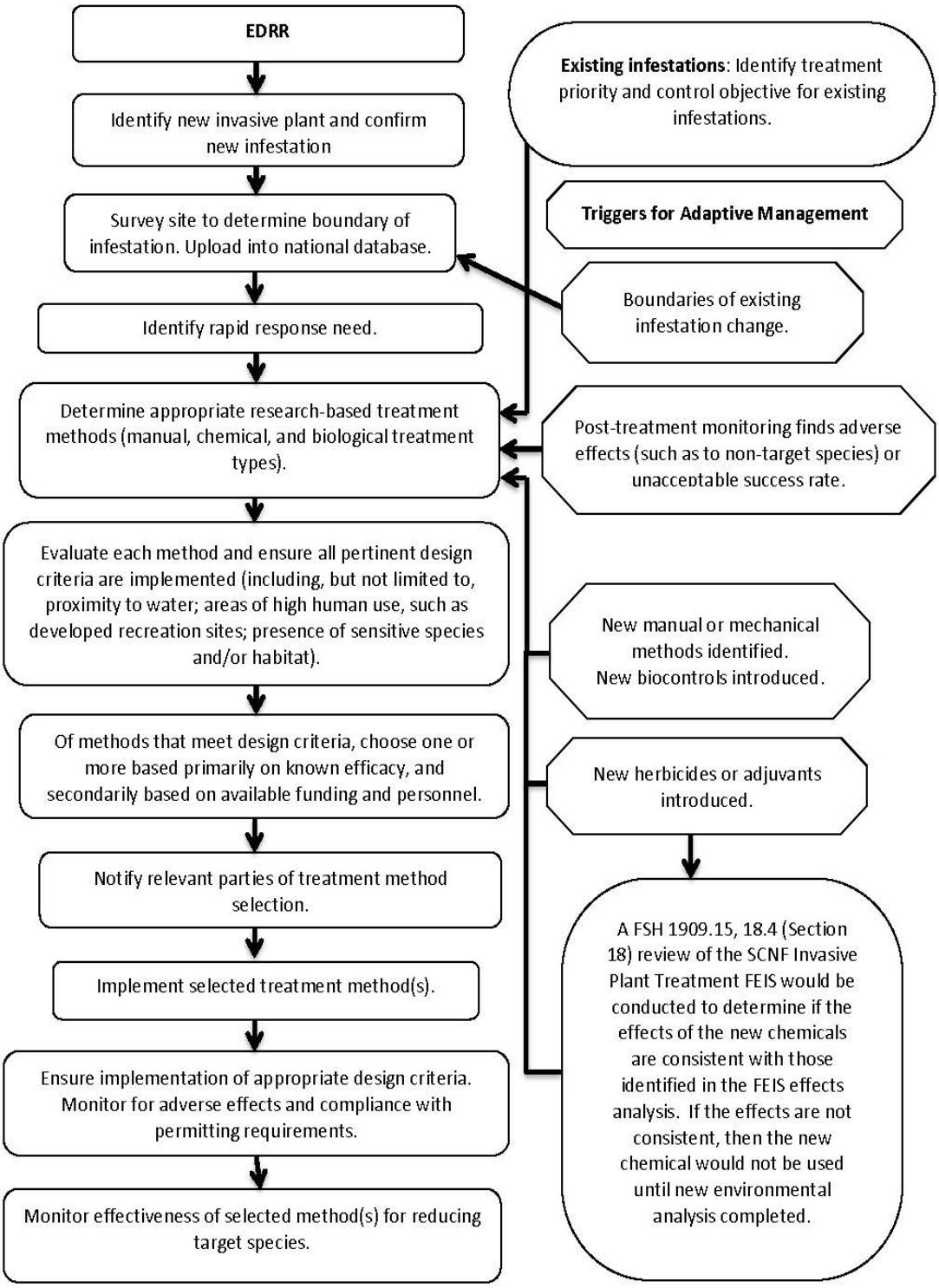
Adaptive Management

The proposed action, which incorporates EDRR, contains an adaptive management strategy to deal with invasive plant infestations that are constantly changing. An adaptive management strategy offers the means to describe and evaluate the consequences of changing or new invasive plant infestations and new treatment options. Provided that the results of treating new infestations and the impacts of new treatment methods remain within the effects described, then the results of this analysis remain valid. The adaptive management strategy consists of three principle components. Two are described below, and the third, monitoring, is discussed later in this section.

1. In order to quickly and effectively treat newly discovered invasive plant infestations while still addressing other resource concerns, a flowchart based on infestation size, location, site characteristics, and consultation with specialists would be used to select treatment methods (Figure 1). Priorities would be evaluated and established based on the criteria discussed in Table 2. All new sites would be mapped and inventoried. Appropriate design criteria must be applied to any invasive plant treatment.

2. New technology, biological controls, herbicide formulations, supplemental labels, and adjuvants are likely to be developed within the lifetime of this project. These new treatments would be considered when their use would be consistent with or less than the effects of those analyzed in this process. The Adaptive Management Strategy would allow incorporation of these new treatment methods if they meet the following criteria:
    - The herbicide must have an Environmental Protection Agency (EPA) approved herbicide label.
    - A risk assessment must be completed for the herbicide by the Natural Resources Conservation Service (NRCS), USDA Agriculture Research Station (ARS), Environmental Protection Agency (EPA), USDA Forest Service, Bureau of Land Management (BLM) or other federal land management agency.
    - New biological agents must be approved by USDA Animal, Plant Health Inspection Service (APHIS) and the State of Idaho prior to their introduction. This approval indicates that the agent is determined to be detrimental to the target plants while at the same time being virtually harmless to native or desirable non-native plants.
    - A FSH 1909.15, 18.4 (Section 18) review of the SCNF Invasive Plant Treatment FEIS would be conducted to determine if the effects of the new herbicide are consistent with those identified in the FEIS effects analysis. If the effects are not consistent, then the herbicide would not be used until a new environmental analysis was completed.
    - Endangered Species Act (ESA) section 7 consultation would be completed prior to the use of new herbicides.

Figure 2-1: EDRR and Adaptive Management Decision Tree



Control and Management

Biological Control

Biological control is the use of plant predators or pathogens that attack and weaken targeted invasive plant species and reduce their ability to compete or reproduce in order to reduce or eliminate invasive plant infestations. Biological controls would be used when the target species occupies extensive portions of the landscape, other methods of control are prohibitive based on cost and location, and an effective biological control regime exists. Biological control activities typically include the release of parasitic and "host specific'' insects, mites, nematodes, and pathogens. Biological treatments do not eradicate the target species, but rather reduce target plant densities to the point where competition with desired plant species for space, water, and nutrients keep populations in check. Biological control treatments are not consistent with an eradication objective, but are an integral part of an integrated weed management approach.

Animal and Plant Health Inspection Service (APHIS) and the State of Idaho have approved invertebrate plant feeders and plant pathogens that are proven natural control agents that suppress, inhibit, or control specific target invasive plant species. Biological control activities include collection of invertebrate plant feeders and pathogens, development of insectaries for collection, transportation and transplantation of parasitic invertebrate plant feeders and pathogens, and supplemental stocking of populations. Biological control agents are transported in containers that safely enclose the agent until release. Releases can be ground-based or aerial. Each release is equivalent to treating approximately five acres (USDA Forest Service 2014).

The treated areas would continue to be inventoried and monitored to determine the success of the treatments and when the released bio-control agents have reached equilibrium with the target species. Repeat visits may need to be made several times a season and over a series of years to determine if additional releases are needed or if a different agent needs to be released.

The use of biological control treatment usually results in delayed effectiveness, often requiring five to ten years for successful reduction of target invasive plant infestations. However, simultaneous increase of native vegetation often eliminates the need for restoration. Biological control is the preferred method in remote areas where access is limited, on high density extensive populations where other control methods may not be appropriate, on species where biological control agents are available and proven effective, and in conjunction with other control methods to reduce density of the target species. The use of biological control is common to all action alternatives.

Design Criteria

- Obtain Animal and Plant Health Inspection Service (APHIS) permit to Move Live Plant Pests, Noxious Weeds, or Soil for those agents when transportation across state lines is involved.
- Use only APHIS and State of Idaho approved biological control agents.
- Use Forest Service protocols for documentation of releases and monitoring and share release information with the Idaho State Department of Agriculture.
- To the extent practicable, collect biological control agents locally or from areas with similar climatic and weather conditions, land and soil types, and cover types to maximize successful establishment.

- Distribute biological control agents at the optimal season and life cycle stage to optimize the likelihood of successful establishment. Distribute quantities sufficient to optimize successful short-term establishment.
- For those agents that self-disperse poorly, actively assist the distribution throughout target infestations by redistribution (collecting and moving the agent to new locations).

Herbicide Application

This method involves the use of herbicides and associated adjuvants. Ground-based or aerial application of herbicides would be used based on (a) treatment objective and priority of the target invasive plant species, (b) accessibility, topography and the size of treatment area, (c) the expected efficiency and effectiveness of the method selected, (d) the risk for spread or invasion into other locations, and (e) potential to harm priority habitats and vegetation complexes such as those associated with threatened, endangered or sensitive species.

Four types of herbicide application would be used:

- **Spot spraying-** This method targets individual plants and the immediate area around them. Most spot spraying is usually done with a backpack sprayer. However, spot spraying may also be applied using a hose from a truck-mounted or OHV-mounted tank, or tanks mounted on pack animals. This is the most common herbicide application method.
- **Broadcast-** Herbicide is applied to cover an area of ground rather than individual plants. This method may employ a spray system mounted on a truck or OHV. Broadcast applications are used in areas where invasive plants occupy a large percentage of plant cover on the site, making spot spraying impractical.
- **Aerial application-** This method would be used in areas where physical features, such as topography, restricted access, size and/or rate of spread of infestation, personnel safety, or other factors such as prohibitive unit cost of ground application occur. Invasive plants would be treated with herbicides through the use of helicopters.

The method of application would result in a variance in the amount of herbicide used on the landscape. For the purposes of this analysis, treated acres represent the perimeter of the invasive species infestation area that would be treated while applied acres are the actual area within the infestation covered by the invasive species. Broadcast methods of application have greater coverage of herbicide than do the more targeted method of spot spraying. The assumption used in calculating applied acres is that broadcast methods would result in treated acres approaching or equaling applied acres. Spot spray methods could be as low as 1 to 10% of the applied acres. For the purpose of this analysis, broadcast aerial application methods would be assumed to have 100% of applied herbicide to the treated area. For ground based applications, a mix of broadcast and spot spraying would be assumed to have up to 40% of applied herbicide to the treated area.

The average applied acres for 2010 to 2012 was 18%. The 40% applied herbicide assumption provides for analysis of increased ground-based broadcast application methods.

The application rates and method depend on factors such as the target species, phenological stage, abundance and distribution of the target species, type of herbicide used, site condition, type of non-target vegetation, soil type, depth to the water table, the distance to open water sources, riparian areas, and sensitive plant species.

Herbicide formulations and mixtures could contain one or more of the active ingredients displayed Table . The range of application rates for each chemical is derived from Human Health and Ecological Risk Assessments and the herbicide label. Additional herbicides may be added in the future at either the Forest Plan or project level through appropriate risk analysis, NEPA procedures, and ESA consultation (discussed in the adaptive management section).

Table 4: Herbicides and Application Settings Currently Used and Proposed for Use

Herbicide (Active Ingredient)[1] Maximum Label Application	Rate (AI[2] or AE[3]/AC[4])	Typical SCNF Application Rate (lbs. AI or AE/AC)	Application Setting		
			Upland	Riparian	Aerial
2,4-D amine	2.0 lbs ae /ac/app[5] 2 apps per year	0.5-2.0 lb./ac	X	X	
Aminopyralid	**0.11 lbs ae/ac/year**	**0.06 – 0.11 lb./ac**	**X**	**X**	**X**
Chlorsulfuron	2.6 oz. product/ac/year (0.12 lbs ai/ac/year)	0.5 - 2.0 oz./ac (0.02 - 0.09 lb./ac)	X	X	**X**
Clopyralid	0.5 lbs ae/ac/year	0.28 - 0.5 lb./ac	X	X	**X**
Dicamba	1.0 lbs ae/ac/app 2 apps per year	0.75 - 2.0 lb./ac	X		
Glyphosate	1.7 lbs ae/ac/app ≤ 8.0 lbs ae/ac/year	0.35 -5.0 lb./ac	X	X	
Imazapic	0.19 lbs ai/ac/year	0.1 - 0.19 lb./ac	X	X	**X**
Imazapyr	**1.5 lbs ae/ac/year**	**0.5-1.0 lb./ac**	**X**	**X**	
Imazamox	**0.5 lbs ae/ac/year**	**0.25-0.5 lb./ac**		**X**	
Metsulfuron-methyl	4.0 oz. product/ac/year (0.15 lbs ai/ac/year)	1.0 - 3.0 oz./ac (0.04 - 0.11 lb./ac)	X	X	**X**
Picloram	1.0 lbs ai/ac/year	0.5 - 0.75 lb./ac	X		**X**
Sulfometuron methyl	8.0 oz. product/ac/year (0.37 lbs ai/ac/year)	2.0 - 6.0 oz./ac (0.09- 0.28 lb./ac)	X	X	**X**
Triclopyr: triethylamine salt (TEA)	9.0 lbs ae/ac/year	4.5 - 6.0 lb./ac	X	X	

[1]Herbicides and application settings in bold are specific to the Proposed Action Alternative
[2]AI=Active Ingredient [3]AE=Acid Equivalent [4]AC=Acre [5]app=Application

Adjuvants

Chemical control activities frequently utilize adjuvants in addition to herbicides for more effective control of target species. Adjuvants are compounds added to the herbicide solution to improve its performance. They can either enhance the activity of an herbicide's active ingredient (activator adjuvant) or offset any problems associated with its application (special purpose or utility modifiers). For example, some adjuvants increase herbicide effectiveness by reducing the surface tension of water, increasing the area of the plant covered by the solution and increasing the plant's

uptake of the herbicide itself. They can be added during the manufacturing process or by the applicator as needed based on site conditions. A list of adjuvants used in the SCNF is in Appendix D of the FEIS.

Design Criteria

General Herbicide Application

- Herbicide application shall comply with applicable laws (Idaho Statute Title 22, Chapter 34 and Idaho Administrative Code Rule 02.03.03), Forest Service policy and guidelines (FSH 2109 and FSM 2150), Endangered Species Act (ESA) section 7 consultation requirements, National Pollutant Discharge Elimination System (NPDES) permit requirements, and with product label directions for the herbicide being used to assure worker safety and to manage potential impacts of herbicide application.
- Always read and follow label directions, including instructions for herbicide use, application rates, equipment and techniques, personal protective equipment for applicators and mixers, and container disposal.
- See Appendix E of the FEIS regarding application of herbicides in proximity to water.
- Prior to implementation, program managers would ensure proper permitting is in place.
- Make sure Material Safety and Data Sheets, safety plans, spill prevention plans and cleanup kits are available to applicators and mixers, per the requirements of FSH 2109.
- Keep accurate and detailed application records, per Idaho Department of Agriculture Rules Governing Pesticide and Chemigation Use and Application and EPA requirements identified in the NPDES.
- Perform herbicide applications by or under the direct supervision of licensed Idaho professional herbicide applicators for forest and contract crews, per Idaho Department of Agriculture Rules Governing Pesticide and Chemigation Use and Application.
- Ensure that contracts and agreements include all of these design criteria as a minimum.
- Monitor wind speed and direction and equipment and spray parameters throughout an herbicide application. No herbicide shall be applied in sustained wind conditions exceeding five (5) miles per hour in riparian areas or in any wind conditions exceeding product label directions.
- Conduct equipment and personnel inspections, equipment maintenance and equipment calibration as needed to ensure proper herbicide application and to meet regulatory requirements. Regularly check equipment and components for wear. Attend to repairs and parts replacement promptly.
- Transport only the quantity of herbicide and adjuvants needed for a project. Secure containers being transported in such a way to prevent the likelihood of spills. Make periodic checks in route to help avoid spillage. Carry herbicides and adjuvants in water-tight, floatable containers when supplies need to be carried over water by boat, raft or other watercraft.
- When out in the field, use practical measures to restrict access to herbicides and adjuvants and spray equipment by unauthorized personnel.
- Off-highway vehicles (OHVs) used to transport or spray herbicides are administratively allowed to travel off designated motorized routes. These vehicles would not be taken off designated routes if damage to soils could occur due to wet conditions. Take care to ensure that disturbance to desirable vegetation is minimized and that no visible “trail” creation occurs.

- Follow the procedures in the SCNF Spill Plan in the event of a spill. Keep the SCNF Spill Plan compliant with NPDES.
- Use indicator dye in the herbicide mix to visually assure uniform coverage and minimize overlapped or skipped areas and treatment of non-target areas.
- Within areas of special concern, such as developed recreation, trailheads, campsites and other high human areas, utilize treatments methods that minimize potential exposure to the public.
- To minimize herbicide drift during broadcast operations, use low pressure and larger droplet size to the extent possible with the equipment being used. Use nozzles designed for herbicide application.
- Equip water drafting equipment with back siphoning prevention devices.
- Wherever possible, mix and load at a distance greater than 100 feet from water and where spilled materials will not flow into groundwater, wetlands or streams.
- No broadcast application methods are used in riparian areas.
- Provide herbicide "awareness" information to forest users as opportunities arise. Treatment areas will be signed prior to herbicide applications within areas of special concern, such as trailheads, campsites, and other high use areas. Make information on where and when spraying and other treatments would occur available to the public at the local Ranger District office. Forest Service and other websites may also be used for public notification.
- Grazing permittees will be made aware of annual treatment actions at the permittee annual operating instruction meetings and/or if requested, notified in advance of spray dates.
- Follow label directions and other information sources to apply herbicides to the target species during phenological stages that optimize target control.
- To the extent practicable, apply herbicides to infestations containing biological control agents at times when the effects of herbicides to the host plants would not interfere with the agent's life cycle.
- Use a spray pattern that avoids application of herbicide to non-target species.

Sensitive Species

- Evaluate sites considered for herbicide treatment for sensitive plant habitat suitability. Survey suitable habitat as necessary prior to treatment. The need for field surveys in suitable habitat is based on factors such as plant phenology at the time of treatment and species' susceptibility to the herbicide(s) being used.
- Mechanical treatment, individual plant treatment (e.g. wiping), or spot herbicide application are preferred methods when treating invasive plant infestations associated with sensitive plant populations.
- For identified sensitive plant populations, there would be a 50-foot no spray zone for all herbicides applied by broadcast-type spray equipment (e.g. vehicle or helicopter-mounted booms or boomless sprayers).
- Glyphosate would only be applied within a 50-foot buffer if the sensitive plant species is dormant. Remaining herbicides may be applied following label instructions.

Aerial Herbicide Application

- The Aerial Herbicide Application Coordination and Safety Implementation Plan would be followed (Appendix F of the FEIS).

- Provide a minimum buffer of 300 feet for aerial herbicide application around developed campgrounds and private land (unless otherwise authorized by adjacent private landowners).
- All live water (perennial streams, flowing intermittent streams, lakes, ponds, springs, and wetlands) would have a 300 foot no aerial application herbicide buffer.
- Aerial herbicide application would not occur in designated municipal watersheds. Idaho DEQ Source Protection Areas would not be included in aerial application project areas.
- Aerial herbicide applications would not occur in Research Natural Areas (RNAs) or proposed wilderness areas. No aerial application would occur within ¼ mile of Designated Wild, Scenic System River (includes Recreation classification) and rivers determined to be eligible for inclusion in the System.
- Aerial herbicide application would not occur over areas with >30% live tree canopy cover.
- Aerial herbicide application would not occur over whitebark pine stands.
- Within known or potential sage-grouse nesting/early brood-rearing habitat, any aerial herbicide application would occur after June 30.
- Helicopters would avoid known raptor nest sites when flying to and from treatment sites and no aerial herbicide application would occur within ½ mile from known raptor nest sites during the following periods (or until young have fledged):
    a. April 1 through August 31
    b. bald eagles - February 1 through August 15
- Aerial herbicide application would not occur when sustained wind speeds exceed 5 mph or label recommendations.
- Aerial herbicide applications would not occur during inversions, or below minimum relative humidity or above maximum temperature, as stated on label.
- Herbicide applicators would obtain a weather forecast for the area prior to initiating a spraying project to ensure no extreme precipitation or wind events were predicted to occur during or immediately after spraying that could allow runoff or drift into water bodies.
- Considerations for choosing sites for aerial application would include the extent of the invasive plant infestation, the cumulative size of the infestation (many small sites in close relative proximity of each other), and the density of the invasive species.
- Aerial treatment areas could be treated recurrently on a 2 or 3-year rotation to ensure effective control. Monitoring would show which areas would need to be re-treated or if treatment areas can be reduced based on effectiveness of previous treatment.
- Public notification would be conducted through press releases in local newspapers and the use of social media and websites which that identify the potential windows of treatment for specific areas. Signing and on-site layout would be performed one to two weeks prior to actual aerial treatment.
- Temporary area, trail, and road closures would be used to ensure public safety during aerial spray operations.
- Grazing permittees would be notified that aerial application would be conducted and of the specific time frames in which treatment would occur to allow the option to remove grazing animals from the area.
- Aerial spray units (and perennial seeps, ponds, springs, and wetlands in proposed aerial units) would be identified prior to spraying to ensure only appropriate portions of the unit are aerially treated. A GPS system would be used in spray helicopters and each

treatment unit mapped before the flight to ensure that only areas marked for treatment are treated. Drift monitoring cards would be placed out to 300 feet from and perpendicular to perennial streams to monitor herbicide presence as needed (Appendix G of the FEIS).

Manual and Mechanical Treatment Methods

Mechanical and manual treatments are typically used to remove seed heads, individual plants or small infestations. They may be used in sensitive areas to avoid impacts to non-target species or water quality, or to prevent seed production. Mechanical and manual approaches are slow and very labor intensive; they are effective only for small infestations.

The term "manual" defines treatments such as hand pulling or using hand tools, such as hand clippers, hoes, rakes, shovels, etc., to remove plants or cut off seed heads. Manual treatments can be effective for annual and tap-rooted invasive plant, but are ineffective against perennial invasive plants with deep underground stems or roots, or fine rhizomes that can be easily broken and left behind to re-sprout. Use of this method might need to be repeated several times throughout the growing season depending on the species. This treatment may require digging below the soil surface to remove the main root of plants.

The term "mechanical" refers to the use of equipment and power tools, including actions like mowing, torching (using a propane burner to kill invasive plants with heat), and weed whipping. Choosing the appropriate power tool depends on factors such as characteristics of the target weed species (e.g. stem size or sprouting ability), the density of the target species and size of the infestation, site location and condition, and soil or topographic considerations. Mechanized treatments are typically used to remove flowering stems to prevent seed production or to reduce or remove above ground biomass. The use of manual and mechanical treatment methods is common to all action alternatives.

Design Criteria

- Obtain necessary state and federal permits, when and where required.
- Prior to any burning invasive species using a torching device, a prescribed burn plan will be completed and compliant with Forest Service Manual 5140 and the Interagency Prescribed Fire Planning and Implementation Procedures Guide, PMS 484.
- Consult an archaeologist prior to initiation of work to determine whether an archaeological survey is needed.
- Incidental weed pulling would not trigger Section 106 review, as there is a very low probability that it would have an adverse effect on an archaeological site.
- Minimize soil disturbance as much as possible to minimize germination of invasive plant seeds and bare soil.
- Avoid non-target species damage to the extent practicable. Select mechanical methods to effectively control the target species (e.g. grubbing/hoeing is inappropriate for rhizomatous species and may increase the density of the invasive plant population as root fragments sprout and become new plants).
- Apply mechanical treatments at the proper stage of plant growth when treatment would be most effective at controlling the target invasive plant.
- Thoroughly inspect and clean all equipment and clothing to remove invasive plant seeds or vegetative propagules to prevent the movement of the invasive plant to another site.

- To the extent practicable, conduct clipping and removal of seed stalks prior to seed maturity to reduce inputs to the seed bank or when seeds are easily picked up and transported by vectors such as wind, humans or animals.
- Specific to aquatic invasive plants, hand-pulling and/or smothering may be used when an infestation is very limited in extent and occurs close to the shoreline of a water body, but has not yet infested deeper waters.

Rehabilitation and Restoration

Sites that have been severely impacted by weeds can be devoid of desirable plant species or consist of only scattered individual relict plants. Soil erosion may have taken place. Ecosystem structure and function may no longer be in place (e.g. mycorrhizal relationships between plants and soil fungi). Natural revegetation can often be slow, but in cases where there are few or no desirable plant species to take the place of invasive plants, natural recovery may not take place at all. In such cases, management activities may be required to assist vegetation recovery and prevent soil erosion. In turn, the revegetation measures would impede the re-establishment of invasive plants on the site. The objective is to re-establish a desired plant community and a return to conditions that foster the recovery of natural ecosystem processes. Equipment that could be used during reseeding activities includes, but is not limited to, hand tools such as rakes or larger equipment such OHV-drawn harrows and aerial delivery. The utilization of rehabilitation and restoration actions is common to all action alternatives.

Design Criteria

- Natural revegetation is the preferred option whenever possible. Assess invasive plant-infested sites or areas of disturbance (e.g. wildfire) to determine if the area is capable of natural recovery after weed control treatments. Determine what mix of desirable or native grass and forb plants still occur on the site and if they are numerous and vigorous enough to be capable of spreading vegetatively or via seed production.
- Assess erosion processes that may be affecting the site and the degree of severity of any soil erosion.
- Consider the most effective, practical and suitable means of providing rehabilitative or restorative measures, whether eliminating sources of disturbance other than invasive plants, or taking actions such as seeding and/or mulching.
- Consider the need to control invasive annual grasses, such as cheatgrass, and forbs, such as annual mustards, that are known to compete aggressively with perennial seedlings trying to establish.
- Determine whether additional assistive measures may be required, such as cover crops, hydraulic mulches, and mycorrhizal inoculums.
- Follow the guidance for revegetation in FSM 2070- Vegetation Ecology
- Use native plants in rehabilitation and restoration where practicable.
- If it is determined that non-native species are the best choice for interim or permanent revegetation, be sure to select species that do not behave invasively under conditions similar to those at the site to be revegetated.
- Purchase only certified invasive plant-seed free seed. Consider the use of site-adapted seed, if available and practicable.
- When seeding, determine the need for site preparation and protective measures that may need to be taken to allow the seeding to establish successfully.

- Plan revegetation activities for the optimal season and site conditions for successful establishment.
- Design seed mixes, whether native or desirable species, that are adapted to site conditions (including soil type, precipitation patterns, plant hardiness zones, etc.).
- Sites where restoration and rehabilitation treatments have been applied may need to be protected from grazing use through temporary fencing, livestock exclusion or other method appropriate to the sites to allow seeded plant establishment.
- Following establishment, continue to practice proper vegetation management to maintain a healthy, functioning plant community that is resilient to disturbance and resistant to invasive plant re-invasion.
- Use only invasive plant seed-free mulches and other products for uses such as erosion control and improved seed germination.
- Ensure that treatment tools and other equipment are free of invasive plant seed before moving to or using on the project site.
- Minimize ground-disturbing activities to the extent possible during reseeding efforts.
- Conduct rehabilitation and restoration activities only in areas with slope gradients less than 45%.
- Conduct rehabilitation and restoration activities only in areas with low or moderate landtype erosion hazard ratings.
- Consult an archaeologist prior to initiation of work to determine if an archaeological survey is needed.

Monitoring

Monitoring is an integral part of any adaptive, integrated weed management program. Monitoring addresses prevention, EDRR, treatment, and restoration efforts, and informs future decision-making and strategy. Both quantitative and qualitative monitoring efforts are included in the overall monitoring program. Post-treatment reviews of monitoring data would occur on a sample basis to determine whether treatments were effective, the type and extent of damage which may have occurred to non-target species, whether design criteria were applied correctly, and if recovery occurred as expected.

Retreatment and active rehabilitation or restoration prescriptions would be developed as needed based on post-treatment results. Changes in treatment methods would occur based on effectiveness of treating the invasive plant infestations. For example, an invasive plant population treated with a broadcast herbicide may be retreated with a spot spray or hand pulled, once the size of the infestation and density of the seed bank are reduced. Monitoring is common to all action alternatives.

Implementation Monitoring

Program elements and site-specific projects should include the following to accomplish implementation monitoring:

- Develop a project work plan for herbicide use as described in FSH 2109.14.3. This plan would present organizational and operational details including treatment objectives, equipment, materials, and supplies needed; herbicide application method and rate; field crew organization and lines of responsibility, and a description of any interagency

coordination. The plan would also include a job hazard analysis to assure applicator safety.

- Conduct site visits during work periods to monitor compliance.
- Initiate monitoring during implementation to ensure Project Design Features are implemented as planned. Document daily field conditions, activities, accomplishments and/or difficulties. Use contract administration mechanisms to correct contractor performance deficiencies.
- Document and report herbicide use, certified applicator information, invasive infestation information and inventories, and invasive treatments using the database of record to record the amount, type and location of herbicide use annually.
- For biological control releases, monitor a selection of biological control release sites annually, tracking agent establishment and target species' response, to determine the efficacy of the release.
- For aquatic herbicide applications, obtain, as required, pre- and post-treatment water quality data for water chemistry, impacts to fauna and to non-target flora and response of the aquatic invasive plant species to treatment.
- For mechanical treatments, monitor rehabilitative and restoration measures throughout the recovery process to quickly identify and correct any problems that may impede successful revegetation.

Effectiveness Monitoring

Effectiveness monitoring generates data that aids managers in assessing trends in infestation number, size, and density, the effective of noxious and invasive plant infestations on native vegetation, the effect of treatments on target and non-target species, and the effectiveness of treatments as implemented. Effectiveness monitoring must be done at multiple scales in order to provide the best insight into the effects of treatment actions. All treatment methods (manual, biological, and chemical) are subject to effectiveness monitoring.

- Monitor size, density, and other biological characteristics of invasive plant infestations.
    - Maintain noxious and invasive plant inventories in the appropriate database of record.
- Evaluate immediate and short-term impacts of treatment on target invasive plants and non-target vegetation.
    - Monitor and document observations of treated sites as practicable in accordance with established guidelines.
- Evaluate long-term effects of treatment on target invasive plants and non-target vegetation.
    - Establish permanent monitoring plots for long-term site assessment.
- Monitor survival, distribution, and effectiveness of biological control agents.

Attachment B- Aquatic Invasive Plant Control Framework Strategy

The Salmon-Challis National Forest's proposed Invasive Plant Treatment Program includes a "Framework Strategy" for dealing with future aquatic invasive plant treatments. While no aquatic invasive plant infestations have, to date, been identified in waters of the SCNF, the Framework has been identified to facilitate and expedite a treatment response if and when an aquatic infestation is identified. Elements of the Framework serve to:

- Specifically identify key agency and non-agency partners;
- establish a routine opportunity for interagency collaboration regarding inspections, potential treatment methods(chemical and/or mechanical), agency responsibilities, funding opportunities, new products/literature, etc.;
- document steps for developing response plans to address any future infestations (e.g. action plans); and
- document that future treatments (chemical, mechanical, and cultural) would not be implemented until completion of the appropriate type of ESA consultation. Identify the need for completion of the appropriate type of site specific ESA consultation prior to implementation of any chemical, mechanical or cultural treatment.

Determinations regarding the need for ESA consultation, and determining agency responsibilities for conducting it, would be made on a case-by-case basis. Emergency ESA consultation would be possible, but decision regarding the type of consultation would be made will be determined at the time of detection and after determining identifying the immediacy and type of threat posed by the identified infestation. It is noted that there are multiple scenarios that could occur and which action plan implementation may not require any ESA consultation. Emergency consultation is a likely result where threats to property, life, or resources are imminent. The framework process should provide a means to have potential treatment tools pre-identified to expedite response and completion of any necessary emergency or standard ESA consultation.

There are a number of factors that weed managers would use to choose the appropriate treatment of an aquatic invasive plant infestation, and measures that would need to be taken to prevent spread to other nearby water bodies. Idaho has a set response to the detection of new aquatic invaders, including the following:

The following example illustrates the framework for response to an aquatic invasive plant infestation.

- Verify reported detection
    - Once the aquatic invasive plant infestation was detected, SCNF weed managers would collect samples for verification of the identification of the weed species
- Make initial notifications to all relevant program managers
    - SCNF weed managers would notify the Forest Supervisor, District Ranger, and other program managers (e.g. range, recreation, and special uses) as well as the County Weed Program Manager.
- Define extent of colonization
    - SCNF would conduct another inventory of the affected waters to detect additional aquatic invasive plant infestations and would also inventory other nearby water

bodies to learn if the infestation was confined to just the one location or is already present in other water bodies.

- Set up interagency response management team
    - SCNF would coordinate with the Idaho state aquatic invasive species coordinator and relevant weed program managers in the county in which the infestation is located.
- Identify needs for ESA Consultation with National Marine Fisheries Service, US Fish and Wildlife Service, or both.
    - Initiate emergency or non-emergency consultation with appropriate Services at this stage.
- Establish external communications system
    - The interagency response management team would work together to identify water users who could be affected by the aquatic invasive plant infestation and by potential eradication efforts. A variety of communication tools could be used including e-mail, phone calls, letters, personal visits, website posts, radio, and newspaper.
- Organize resources (personnel, equipment, funds)
    - The interagency response management team would determine and organize the resources needed to conduct inventories for other water bodies potentially infested, notify water users, identify a proposed eradication treatment, and initiate a monitoring program.
- Prevent further spread via quarantine and pathway management
    - Since the risk of moving aquatic invasive plant infestations to other nearby water bodies would be very high, SCNF weed managers MAY recommend to the Forest Supervisor and District Ranger that an emergency closure order be placed in effect for the infested waterbody at least until the initial phase of treatment and monitoring was complete.
- Launch available /relevant control actions
    - In order to determine the treatment options available to eradicate an aquatic invasive plant infestation, weed managers would need to define the characteristics of the invasive species, the characteristics of the infested waters, and human uses of the waters.
    - Weed managers would consider the available range of treatment options to eradicate the infestation. Eradication is the SCNF management objective for aquatic invasive plants because they are new invaders that are not present elsewhere in the SCNF. Eradication helps prevent the movement of aquatic invaders from one waterbody to another.